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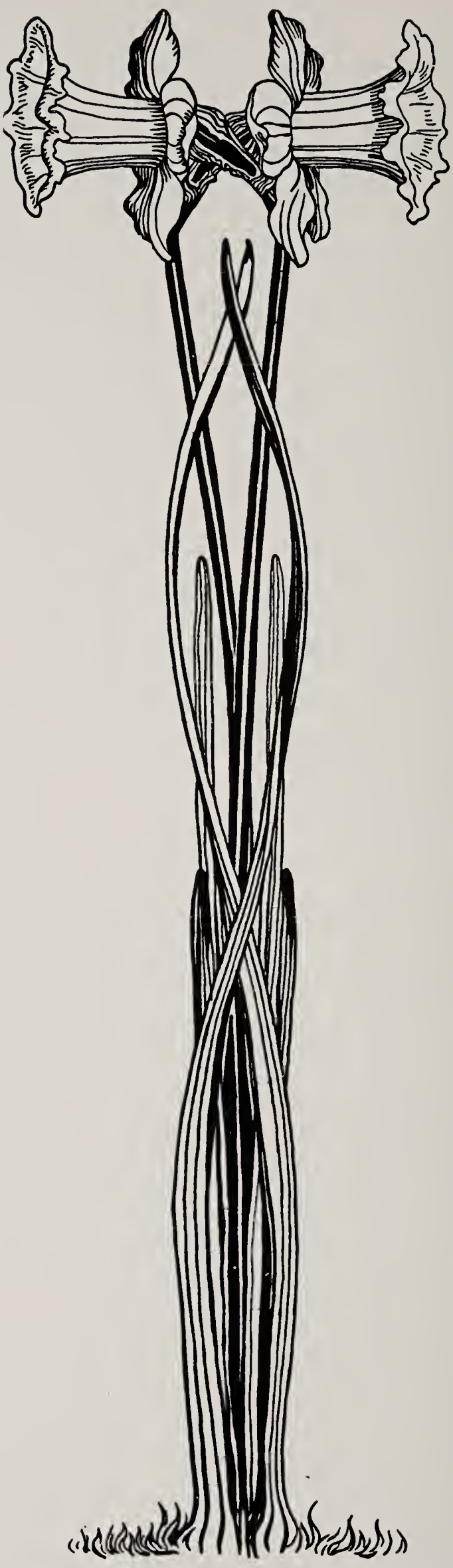

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The Washington Park

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Texture in the Landscape

TIMOTHY HOHN
Curator of Plant Collections

We are undoubtedly a visually oriented society, nurtured by the video age and immortalized by the words of Billy Crystal, "You look maarrvelous!". Naturally, we want our landscapes and gardens to look "...maarrvelous!" as well. But have we fully explored all of the ways in which we can use plants to create a stimulating landscape? Of course not! We tend to emphasize one visual characteristic of ornamental plants over all others — usually flower color. Plants not only provide color in the landscape but also texture — a tonal and dimensional quality that is neither subordinate to, nor totally dependent on, the artistic use of color. If color was a comedian, texture would be the supporting, contrasting and complementary straight man.

Texture in the landscape is a function of the physiognomy (the external appearance, form, and structure) of a plant or grouping of plants present in the landscape. In other words, texture has a great deal to do with the overall form, habit, and vegetative character of a plant, enduring qualities which often outlast temporary shows of color. Throughout the seasons, the visual texture provided by the myriad shapes and sizes of foliage, branching patterns and silhouettes, festooned inflorescences, and drooping fruits form the background and fabric of the landscape.

In one way, the importance of texture can be easily understood when one considers that the average leaf is with us much longer than the average flower. The texture of plants is manifested by several qualities: 1) plant shape, 2) branch and stem silhouette or pattern, 3) foliage characteristics including leaf size, shape, surface texture, and orientation, 4) flower characteristics such as size, shape of inflorescence, color contrast with foliage, and orientation, 5) fruit characteristics such as cluster size, cluster shape, individual fruit shape, and 6) bark texture. As you can see, here is another complete set of variables that we can toss into the plant selection and garden design hopper for çareful consideration.

The textural qualities of plants, coupled with their shapes, can be used to great effect to define a garden as an enclosed space. Plants with many small branches (finely branched) and small, tightly packed leaves, such as boxwood *(Buxus* sp.), Japanese holly and its cultivars *(Ilex crenata)* and *Phillyrea*, appear as solid objects which lack shadow and depth. They are often best used toward the

The small and tightly packed leaves of Ilex crenata *var.* rotundifolia *give the plant the appearance of a solid object. They should be used toward the back of a planting to create a sense of enclosure.* *photo: E.F. Marten*

back of a planting to create a sense of enclosure. The same can be said of plants with different leaf surface texture; shiny leaved plants can be used in the foreground while plants with a matte leaf surface should be used in the background. Both of these examples illustrate the effect of texture on the play of light to create shadows and, in so doing, depth.

Leaves probably contribute to the visual texture of a plant more than any other character. A great deal of garden interest can be created simply by the juxtaposition of plants with contrasting or complementing leaf texture. If these plants are deciduous, however, one must also consider the effect that their winter aspect will have on the composition they create. The sharply contrasting fine texture of cutleaf sumac (*Rhus typhina* f. *laciniata*) against the coarse empress tree (*Paulownia tomentosa*) becomes a completely coarse-branched composition in winter.

Coarse or bold-leaved plants generally draw the eye and can be used as effective focal points. A gunnera in the garden is like a spot-light on a dark stage. The foliage of *Gunnera* (*Gunnera manicata* and *G. chilensis*) is so large and bold as to render it a prima donna in all but the largest landscapes.

Astile plumes add boldness to a design without adding weight.

Fortunately, gunneras prefer waterside positions where the smooth, reflective, horizontal surface of water is a perfect foil. The shadows created by large leaves give greater visual dimension to a planting and also provide microclimates for smaller plants. Large and boldly shaped leaves contrast with, and are shown off to, great effect in front of solid objects such as masonry or solid-appearing plantings such as densely clipped hedges. Too many coarse-textured plants, however, can be unsettling and oppressive.

The technique of coppicing certain coarse-textured trees to perpetuate exceptionally large juvenile foliage is not uncommon in Great Britain. Coppicing involves the periodic, sometimes yearly, cutting back of growth to ground level. The response of *Ailanthus* and *Paulownia* to this treatment is dramatic in the size of the new foliage that is produced. The effect is bold and tropical in appearance. This technique is more commonly used in our area (though not always deliberately) with *Eucalyptus* to produce the colorful and interesting shapes displayed by their juvenile foliage. Please keep in mind that coppicing is recommended only for special effect and should not be a part of routine tree pruning.

Plants with fine-textured foliage keep a composition airy and light. Trees with this texture, such as mimosa *(Albizzia julibrissin)*, flame ash *(Fraxinus oxycarpa)*, honey locust *(Gleditsia triacanthos* cultivars), and others present a feathery silhouette against the sky, casting a filtered shade. The ash and honey locust are commonly used as street trees, not only for the type of shade they cast but also because they break up expansive views of masonry without seeming oppressive, plus they help filter particulates in the atmosphere.

Fine-textured plants are not as visually powerful as their coarser relatives but are, nevertheless, very important for toning down or focusing bolder elements. They often must be used in a mass in order to achieve the correct textural balance. A single *Astilbe* is no match for a *Gunnera* simply because of the difference in size and scale, not to mention the textural dominance of the larger plant. To counteract the boldness and size of *Gunnera*, it must be contrasted with an entire bed of *Astilbe*, or other fine-textured companions such as ferns. Interestingly, when astilbes come into bloom, their textural effect is stronger without being overly heavy because of how their finely branched, airy plumes stand upright above their lacy foliage. The spikey nature of their plumes, a characteristic of form, adds boldness like an exclamation point without adding weight.

Sparkling boldness is a textural character probably best attributed to the monocots, that subset of flowering plants with one embryonic seed leaf (cotyledon) and strap-like (or grassy) leaves that have parallel veins. The current wave of interest in ornamental grasses can most likely be attributed to a recognition of this unique textural quality. Pin cushions of various rigidity, with inflorescences that accentuate and enhance this spikey character, can be a substantial aphrodisiac to gardeners looking for a source of dramatic effect. With this much textural power at your fingertips, one might assume a need to proceed with caution, but no! Because grasses can be bold

Figure 1, Veronica spicata, Asclepias tuberosa *and* Bergenia cordifolia *at Longwood Garden.*

photo: author's

but not oppressive, qualities earlier ascribed to *Astilbe*, they are versatile. They are equally stunning as focal points or in masses. British gardeners tend to use grasses as individual exclamation points scattered through perennial borders or shrub plantings, exemplified by Christopher Lloyd at Great Dixter. American designers seem to lean toward the concept of massing, reminiscent of our native Great Plains, a technique best exemplified by various projects done by the Washington, D.C. firm of Oehme and Van Sweden and, on a smaller scale, the McVay Courtyard at the Center for Urban Horticulture, designed by Iain Robertson.

Landscapes convey their own textural effect, which is the culmination of the individual textures, forms, and habits of the component plants. A landscape may be a monoculture of texture, such as a grassy meadow, or a mosaic of textures composed of many vignettes of textural complements and contrasts. Probably the most ubiquitous garden landscape in the Pacific Northwest is composed of conifers and rhododendrons. Though a tiresome combination because of its popularity, it does present a pleasing balance of texture. The coarse, yet elegant, foliage of the rhododendron is set off nicely against the dense, lacey foliage of conifers. In addition to this pleasing contrast, there is a complementing horizontality to the branching pattern of the conifers and the leaf orientation of the rhododendrons. And because of the arrangement and number of a rhododendron's leaves, light is able to penetrate its canopy and create a sense of depth and texture while conifers serve as a solid background.

Perhaps a critical look at a few garden settings will help to illustrate some of the above concepts. Figure1 is a scene from a stylized rock garden at Longwood Gardens, Kennet Square, Pennsylvania. The textural quality of this composition is derived from the shape of the herbaceous perennial inflorescences and the shape, size, and orientation of the leaves of the foliage plants. Stability is provided by the solid, densely foliated forms of the surrounding conifers. An immediate, stimulating contrast is provided by the use of

Fig. 2, Sea World. *photo: author's*

the coarse, rounded leaves of the *Bergenia* in the background, the pointed, angular leaves of the yucca in the mid-ground, and the narrowly upright inflorescences of *Veronica* in the foreground. As a coarse-textured plant for use at the ground plane level, *Bergenia (Bergenia cordifolia* and other species) is ideal because its wavy margins and variable leaf orientation give it a lively, bouncing character. This composition, if left to stand alone, would be somewhat too vertical because of the size of the yucca/veronica planting in relation to the bergenia; a situation that has been nicely moderated by the addition in the foreground of the butterfly weed *(Asclepias tuberosa)* with its flat-topped umbels of flowers. An important lesson to be learned here is that the shape of an inflorescence, usually only considered for color, can have an important effect on landscape texture.

Tropical and interior landscapes have the potential to be wonderfully textural in aspect. Consider the landscape in figure 2, located at Seaworld in San Diego. As mentioned earlier, coarse or bold-leaved plants generally become the immediate focal points and, in this case, the white bird-of-paradise *(Strelitzia nicolae)* in the foreground is no exception. Its impact is greatly enhanced by the sea of green mist behind formed by the papyrus *(Cyperus papyrus)*, a startling foil of fine texture. The bamboo in the far background is an intermediate textural component that not only serves as a suitable canvas but also reiterates the vertical theme of this composition. All three of these elements become extremely active with a slight breeze — the landscape equivalent of a hologram. The foreground is planted with natal plum *(Carissa grandiflora)*, which is diminutive in relation to the other elements but more stable texturally — a necessary ingredient in this contrasting, dynamic combination. If this were a large photograph, one could see that the primary element in the landscape is the papyrus. Accent plantings of contrasting texture or color are scattered throughout. If the startling contrasts illustrated here were carried out in sequence throughout the entire planting the overall effect would be chaotic and unsettling. Such drastic contrasts should be used sparingly in order to preserve their impact and value.

These examples are somewhat bold in order to make a point, it is well-advised to err on the side of subtlety in the use of texture. Once texture has been fully considered, it is all too easy to run away with contrasts at the expense of stability. The vitality of our gardens and landscapes is partially determined by our thoughtful consideration of all the useful qualities of our favorite plants.

Lollipop Yards

CASS CLELAND TURNBULL

Gardeners I know shake their heads when they pass yards where all the shrubs have been meticulously sheared into boxes and balls. You see these yards everywhere: junipers sheared into blankets and cigar boxes, little green balls are perched on the ends of branches, and what used to be trees are now giant round globes on sticks. The act is referred to as "poodle balling," the landscapes as "lollipop yards." Inappropriate shearing is really carnage at its worst, and uninspired at its best. Next to tree topping, shearing is the greatest travesty in the gardening world.

Every once in a while I see a sheared yard that is done so well that I cannot help but admire it, something I would never admit to a fellow gardener. However, unless you happen to own a mansion in England with a boxwood maze out back, sheared shrubs are the pits. I remember eleven years ago when my boss pointed out one of these yards to me and described it as being "sheared to within an inch of its life!" The phrase has stayed with me, even though at the time I thought the yard looked kinda cool. Yet knowing what I know now has rendered that yard a source of nausea. This knowledge I will impart to you.

I should note at the outset that there is nothing wrong with the great topiary of Europe and England. The long, straight, sheared hedges are beautiful; the clipped hens of the English country house are great fun. I saw a photograph once of a field wherein a horse and rider were jumping a hedge in pursuit of the hounds: each done in greenery, each dog a separate shrub. It was inspired (and probably required an acre of land and at least one full-time gardener to maintain it). The Japanese shear masses of low shrubs in their artful gardens to create an illusion of the low rolling hills of the countryside.

What is significant in these two examples is that the sheared shrubs are carefully chosen for growth habit, and are trained from the be–ginning for these specific purposes. These specimens are usually evergreen, tough and can withstand tight shearing. They grow slowly so that you don't have to keep at it; they "break bud" if you cut into them, and will green-up inside; their leaves are small and spaced closely together on the branches (small internodes) so they will not look destroyed when freshly cut. Examples of good plants to shear are yews, boxwood, Japanese holly, regular holly, and privet. The Japanese also shear (I can hardly bring myself to list it) evergreen azaleas, as well as conifers such as spruce, *Thuja*, hemlock, and some types of junipers. Finally, these sheared shrubs are then used *only* in appropriate settings, such as formal gardens, or used *only* as an accent in a garden.

DON'T SHEAR YOUR SHRUBS! Not only is it in extremely bad taste when not done properly but, in addition, it is extremely high-maintenance, labor-intensive gardening.

Poodle-balling. *drawing: Deborah Stenoien*

After about fifteen years of ignoring his landscape, Joe Homeowner decides that things look out of control so he goes out and shears everything into balls. He feels good because it looks so tidy and he gets lots of compliments. What he is unaware of is the yard that took fifteen years to look out of control will grow back to its previous state in about one month, depending upon the time of year in which the shearing attack takes place and upon the inappropriateness of the shrubs chosen for onslaught. Some shrubs such as cotoneasters rebound and rebel very quickly. The shearer has just locked himself into a high maintenance routine, involving three to six shearings each year — forever — if he wants his yard to look "tidy" (I can't say good).

Joe Homeowner will also discover that his balls and boxes get bigger every year. Soon he can't open the garden gate. One day he realizes he can't see out the windows because of giant balls of camellias and acubas. Shearing plants creates a sort of twiggy outer shell of greenery that shades the inside of the plant. The inside then turns brown, leafless and dead, and is full of crud. Rather than cut into this ugliness the ball gets bigger every year. Some plants will be ugly immediately after "pruning" but will green up. This is not the case with junipers and many conifers. When these plants are finally cut into so that you can walk up the stairs, the dead, ugly branches revealed do not green up — not next year or ever!

Selectively thinned and properly pruned shrubs are easily reduced in overall size and mass, and always look natural, as if they had grown to exactly the right size. The light that reaches the interior branches ensures a green twig or branch to cut back to. And well-pruned plants need attention only once a year, and often times they will go for even longer periods between prunings. If shaped according to their natural growth habit, larger plants will look less oppressive because you will be able to see through and into them.

DON'T SHEAR YOUR SHRUBS because it is bad for their health and can start them on the road to death. I see entirely too many dead Alberta spruces. These are the dense, small, perfectly conical-shaped conifers that are often grown in pots. They die because they are so compact that when they get spruce aphids or mites the insects spread so fast that

they die quickly, before the owner knows what hit them. Professional gardeners are always opening up the centers of shrubs to allow for light penetration and air circulation, and to reduce dead wood, disease and pests. It is the name of the game. Shearing, however, creates the antithesis of an healthy environment. The effect is so gradual that most people never connect the two. If shrubs screamed when they were being sheared (as I am sure they must), people wouldn't do it.

It is especially hard on shrubs to shear them heavily once they have been allowed to grow to maturity in a natural state. It is a stress on a plant which will start a previously healthy specimen on a downward spiral lasting from a month to several years. When I see a recently sheared yard while driving I watch it during the succeeding months to see what dies either in part or in total. It usually takes a series of blows, such as heavy shearing, weed competition, a hard winter, or a dry summer, to completely kill a plant.

DON'T SHEAR SHRUBS because it ruins their natural beauty, i.e., the reason they were chosen in the first place. In some cases, such as magnolias, Japanese maples and rhododendrons, shearing qualifies as a crime against nature. All the plants in the nursery were bred and selected to offer you some specific show or shows. Some afford us beautiful blooms, like roses and forsythias; some are planted for fragrance, like lilacs and lavender; some for fall color and some for texture. And then there are those with decorative berries or bark, or bold architectural qualities, such as Lawson cypress, sheared hedges, and Pfitzer junipers.

Most people know that is is dumb to shear your roses and lilacs. This logic needs to be extended for most other shrubs. Flower production is reduced or eliminated by shearing, depending on the time of year and the frequency of assault. Assuredly the plant's shape and texture is ruined and any semblance of good looks in the winter (if the the shrub is deciduous) is wiped out when sheared. A plant should look as good in the winter as it does in the summer, however this kind of "pruning" practice will destroy attractive branching patterns.

The most beautiful forsythias I see are the ones in neglected yards: they are as big as a house, a big yellow house at that. *Escallonia* is another commonly sheared shrub which summer blooms, and when left to its own devices, reminds me of fireworks. *Abelia*, another summer-bloomer, would have infinitely more wonderful sweet-smelling pink bells on if it is not sheared. And the stray branches that pop up like rockets from the sheared abelias need only a few well-placed snips to return all to good order. Other commonly sheared shrubs include: *Deutzia*, *Kolkwitzia*, pines, heathers, *Pierus*, *Andromeda*, *Skimmia*, *Choisya*, zabel and otto lukens laurel, all cotoneasters, *Weigela*, *Viburnum tinus*, and all of the barberries. All of these can be pruned to control size and to show off their natural aesthetics.

If you still desire sheared shrubbery I suggest you do it right and make a dragon or a duck or something. Or limit yourself to one perfectly straight hedge. Be aware of what you are doing and follow the rules. For further reading I suggest the chapters on shearing in Lewis Hill's book, *Pruning Simplified*, (however I do not necessarily indorse his other pruning advise). The three general rules to follow are: 1) pick the correct plants, Mr. Hill has some helpful lists, 2) shear them from the time they are small, every year, to make them not only bushy from the start, but also to avoid stressing them, and shear them harder and more often when they reach the desired height, and 3) prune at the appropriate time of year. Mr. Hill suggests once a week during the spring growing season for conifers. He also recommends shearing after a dew or rain fall. Shear broadleafs more often throughout the year.

Although good topiary is a delight, I hope you will explore the joys of a yard that is naturally beautiful, one that grows with a minimum amount of pruning. If so, you may wish to learn selective pruning basics, classes are offered by the University of Washington Experimental College, the Center for Urban Horticulture, Edmonds Community College, Lake Washington Voc-Tec's Continuing Education Program, and South Seattle Community College.

Salal: The Cinderella Plant

VICTOR B. SCHEFFER

In 1952 our family of five settled on a wild acre in what is now Hilltop Community, a residential park south of Bellevue. It had been logged and burned in the1920s, then left to the healing of nature. We were attracted by its green cover of salal, *Gaultheria shallon*, a native, broad-leaved evergreen shrub which we knew would give us a good start on landscaping. But now, 36 years down the road, we've decided that salal has its good points and its bad ones.

Botanist Arthur Kruckeberg, at the University of Washington, calls it the "Cinderella plant" of developers and highway engineers because they are belatedly discovering its rich potential for landscaping. Salal does, indeed, survive in many habitats. On hot, dry exposures it creates shrubbery less than a foot high, while along foggy seashores it grows in thickets higher than a person's head. The seeds of salal, carried by birds and chipmunks, often germinate on the tops of rotting stumps where, free from competition, they produce aerial bursts of foliage. Salal is genetically adapted to resist Pacific Northwest diseases, pests, and bouts of harsh weather.

In May, the pink envelopes of the flowers open to reveal clusters of white bells like popcorn strung on a Christmas tree. Should there be a long Indian summer, a few plants will bloom again. (In the very warm year of 1987 we saw flowers on December 11th.) Around the Fourth of July the flowers gradually give way to dark purplish, grape-like berries. These can be cooked into a rather bland, though interesting, jelly; improved if one adds a dash of lemon juice. When our daughters were in the Bluebird (or was it Brownie?) stage they once spent a happy morning dyeing cotton scarves in hot salal juice. However, the soft magenta color faded after a trip to the laundry.

Soon after we had settled on Hilltop we began to stimulate the existing growth of salal by piling sawdust three inches thick around the bases of the plants, following with a high-nitrogen fertilizer. The plants responded, eventually choking out bracken, grass, thistles, and fireweed. In June, each plant sent out strong white runners giving rise to daughter plants. But, with the passing of time we learned that salal has two undesirable traits: it relentlessly invades the root systems of other, more desirable ornamentals, and it tends to reach a sort of senescence marked by the browning of leaves and the dying of stems.

Top: Salal blooming in May. Bottom: Close-up of flowers. *photos: author's*

This condition is most common in plants exposed to full sun and wind. We concluded that very large plants growing on exposed sites simply cannot draw enough moisture from the ground to hold them through our typical, dry Puget Sound summers.

To stop runner invasion we use a rotary tiller along the border of the spreading salal. If the growth is under trees we use a sturdy power mower with the blades set high. To cope with senescence we watch for early signs — individual plants turning yellow — then cut all the plants in the group nearly to the ground level. (Usually in the dormant season, January to March.) We then spread fine bark

Salal berries in July. *photo: author's*

over the stumps and allow new stems to sprout. A year or two will pass before the site again looks green, though, in the meanwhile, the bark cover is not unpleasing.

I don't wish to end on a downbeat note, for salal *does* deserve a Best of Class award among our Northwest evergreens. It gives delight throughout the year. Its green tips glow in early summer. Song sparrows and towhees nest in its shadows. Because its leathery leaves are slow to decay, three or more generations accumulate on the ground, composing a rich duff through which woodmice and shrews rustle for grubs, cocoons, slug eggs, and weevils. The duff gives off a faintly musky, woodsy odor peculiar to the species. On foggy mornings in autumn, the bushes sparkle with the dewy webs of grass spiders. Each web is a net woven around a crater-like retreat from which the spider emerges to seize her prey.

In October, robins gather in busy flocks to gorge on the berries, storing energy for the southward migration. They are excited by feelings they can't possible understand. And the first puffy snows of winter bring a myriad of art forms to the tips of the bushes, forms older than humankind yet forever new and fresh.

The Leguminous Shrubs of the Arboretum

JAN PIRZIO-BIROLI
Arboretum Naturalist

In the article "The Leguminous Trees of the Arboretum" which appeared in the previous issue of the *Arboretum Bulletin* (Winter, 1987). We described trees of the family Leguminosae as they are represented in the Arboretum collections. Since this family is characterized by several distinct flower forms and an unusual root function, please refer to the introductory paragraphs of that article and the table concerning root nodulation which is included therein as well as the chart on page 16. It should be remembered that the family is united taxonomically by the fact that the fruiting structure of all its members is a legume, i.e., a pod which opens on two sutures. In this article, we shall extend our survey to selected leguminous shrubs. In all cases their flowers are papilionaceous except in the genus *Cercis*.

Cercis species (the redbuds)

Since *Cercis* is capable of assuming the stature of a small tree, it may be considered transitional between a tree and a shrub. The redbuds have very distinctive leaves, simple, more or less rounded in outline with a heart shaped base and five to seven nerves radiating from the juncture of leaf and petiole. For this reason, other plants with similar leaves often contain in their name a reference to *Cercis*, e.g., *Disanthus cercidifolius* and the genus *Cercidiphyllum*. Another unusual character of *Cercis* is that the flowers, although appearing to be papilionaceous, actually have petals more or less equal in size with the three upper ones being slightly smaller than the two lower ones. For the most part the purplish to pink flowers are produced in clusters along the stems.

Species of *Cercis* are distributed on all continents of the Northern Hemisphere. The California native, *C. occidentalis* has bright green leaves two to three inches across that are rounded or notched at the apex. Specimens in the Arboretum's collections are particularly decorative because in addition to producing long-lasting pink legumes, they frequently bloom a second time in late summer, offering a pleasant rosy complement to the fruits and green leaves.

The famous Judas tree, *Cercis siliquastrum*, is native of S.E. Europe from Dalmatia into the Near East. Its common name derives from the legend that this was the tree from which Judas hanged himself after the betrayal of Christ. Despite this sad tradition, it is one

Cercis canadensis.

of the most attractive flowering trees from Europe, producing clusters of long-stemmed flowers along the trunk and branches before the leaves appear. Although the handsome leaves are similar in outline to those of *C. occidentalis,* they are glaucous and somewhat larger.

Our collections contain two other species of Cercis. Although C. *canadensis* from the eastern and central United States is represent–ed by several cultivars and varieties, it does not seem to flourish in the sites where it is established, possibly because these are more shaded than they like or because our summers are not hot enough. It is beloved in its native habitat where it grows in great abundance and blooms prolifically with shortstalked flowers. The pointed leaves may be thinly downy beneath.

The Chinese taxon, *Cercis chinensis*, has flowers carmine in bud and clear pink when fully open. Its leaves, similar in shape to those of *C. canadensis,* are completely glabrous beneath and have cartilaginous margins. A beautiful, small specimen grows at the foot of a Douglas fir facing west where it receives enough afternoon sun to encourage heavy bloom.

While *Cercis occidentalis* will remain a medium-sized shrub up to 15 feet, the other species are potentially much larger, with *C. chinensis* reaching 50 feet in the wild. Since all species prefer a dry, sunny location, they are planted in the Mediterranean section, more or less north of the Leguminosae.

Robinia hispida var. *fertilis* (rose acacia)

Like its relatives, the black locust *(Robinia pseudoacacia)* and the pink-flowered hybrid 'Idaho', *R. hispida* var. *fertilis* produces pendent racemes of papilion-aceous flowers. In the case of this shrub, however, they are a deep rose color and the largest of the genus, with only five to ten in an inflorescence. The most distinctive character is the dark red bristles, gland-tipped, and quite soft to the touch. These cover the stems, petioles, calyx and relatively small pods. Since the legumes of the Arboretum specimen produce fertile seed, it is classified as the variety *fertilis,* for the type of the species is sterile, reproducing only by suckering or by other vegetative means. Our plants also sucker freely, a source of relief several years ago when the parent plant was uprooted. The present specimen is a six- to eight- foot shrub hidden away at the back of a bed near the Broadmoor fence east of the giant sequoias in the Leguminosae. A native of southeastern United States, *R. hispida* is sometimes grafted in England to form a low, bushy-headed tree.

Erinacea anthyllis

A delightful plant worthy of a choice location in any rock garden is *Erinacea anthyllis,* which after thirty years growing south of the Arboretum greenhouse is about 15 inches tall and about 1 1/2 feet wide, a tight bun with rigid, nearly leafless, spine-tipped branchlets. The half-inch flowers are blue with only a hint of red, a unique color for the Leguminosae. They are produced in spring in short-stalked few-flowered clusters near the tips of the branchlets. The corolla is covered for two thirds its length by a silky calyx which becomes inflated after flowering, producing small pods.

A close-up of the flowers of Adenocarpus decorticans. *photo: Brian O. Mulligan*

This unusual, hardy plant is native in Spain and North Africa where it may spread to three feet wide. It needs a sunny location and is said to prefer a limy soil.

Colutea species (bladder senna)

The most distinctive character of *Colutea* is the bladder-like pods which remain inflated and closed unless one chooses to "pop" them. They resemble the pods of no other member of the Leguminosae, but their analog may be found in two unrelated genera: *Staphylea* (bladder nut) and *Koelreuteria* (the golden rain tree).

"Senna," the second part of the common name, derives from an Arabic reference to another legume, *Cassia,* whose leaves have cathartic qualities known to be present also in the leaves of certain species of *Colutea*. The latter otherwise bears no resemblance to that pan-tropical genus.

The four-inch leaves of our coluteas have variable numbers of delicate obovate leaflets and axillary, few-flowered racemes. The banner is nearly round and slightly reflexed to form a most graceful blossom. Of the two taxa in the Arboretum's collections, *C. orientalis* hybrid is perhaps the more interesting because of its unusual flower color, grading from touches of yellow into a rich henna. It blooms continuously, but never profusely, throughout the summer while early pods are ripening. *Colutea persica* has yellow flowers with a red spot on the banner. Both species are native of Asia Minor. They are planted together at the north end of a bed near the Broadmoor fence just north of the previously described Robinia. *Colutea* is known to thrive in sunny sites and poor soils. Perhaps if our plants were in a sunnier location they would be more noticeable in bloom.

Adenocarpus decorticans

In the Arboretum, the twisted, naked, exfoliating branches of *Adenocarpus decorticans* spread from the base, about two inches in diameter and about six feet long. When it comes into bloom in May, its gaunt appearance is forgotten. Numerous short racemes of

Nodulation Chart

* = Nodulation reported, ! = Nodulation widely reported, ? = Nodulation questionable, - = Nodulation absent or not reported.

Cercis spp.	?
Robinia hispida	*
Erinacea anthyllis	-
Colutea persica	*
Adenocarpus decorticans	*
Ulex europaeus	*
Cytisus scoparius	!
Cytisus battandieri	-
Cytisus purpureus	*
Genista cinerea	?
Genista tenera	-
Genista hispanica	*
Genista carinalis	-
Genista pilosa	*

large, brilliant yellow flowers are so densely crowed at the branch tips that they nearly hide the foliage, which consists of slightly pubescent leaflets with rolled margins that appear to be nearly linear. These shrubs offer such an outstanding display during their three-week blooming season that they invite numerous queries from visitors to the Arboretum. Perhaps no other plant arouses so much comment except the paulownias. Since this Spanish species needs the sunniest possible location, it has been planted on the south side of the greenhouse and in the Mediterranean section.

Adenocarpus decorticans would benefit from occasional propagation by seed or cuttings to produce plants of a tidier appearance. It is said to be short-lived and shy-blooming in England. This is certainly not the case in the Arboretum.

The Brooms

Three genera are the major components of the brooms, whose common name derives from their twiggy habit suggesting that in earlier times they were used for that purpose. Overall, they have simple or trifoliate leaves, sometimes on the same plant, or no leaves at all, instead using the green stems for photosynthesis. There are, of course, exceptions to this generality. The main genera are *Cytisus*, *Genista* and *Ulex*, all of them having a shrubby habit. With few exceptions, the flowers are golden yellow. In general, they are native of Europe and the Mediterranean.

Ulex europaeus (gorse, furze)

Even though the Arboretum does not grow it, common gorse must be mentioned as the odd-man-out in this group. It is part of a small genus that is easily distinguished from the other two by its spine-tipped branchlets and yellow calyx. *Ulex europaeus* is a medium-sized shrub native of Europe, which forms a noticeable component of the British landscape and is an unwelcome escape in New Zealand where whole hillsides may be covered with it. It has little garden value except as a covering for hot, dry banks, for which it occasionally has been used by our highway department. The small flowers appear singly along the stems of the previous year's growth. A double-flowered form is said to be more noticeable in bloom and of a more compact habit.

Cytisus species

As a glance at their treatment by such an author as J.W. Bean will reveal, serious nomenclature difficulties exist between *Cytisus* and *Genista* as well as some of the minor related genera. Thus the names of individual species often have been changed more than once.

Perhaps the best-known of all the species is the western European *Cytisus scoparius* (the Scots or Scotch broom), largely because of its frequent use for highway planting and because it has escaped all along the West Coast from California to British Columbia and throughout New Zealand, probably having been introduced by homesick British settlers during the 19th Century. Since it blooms and seeds heavily, if parent plants are nearby, a fresh vacancy is soon filled by these large shrubs. The fact that root nodulation has been widely reported in *C. scoparius* indicates that

this may be a factor in its propensity to be a pioneer species. In our area, with the rapid expansion of our suburbs, it is difficult to remember that 30 years ago pastures and vacant lots east of Lake Washington were densely covered with this attractive but weedy plant. Before they were more or less eradicated by development, numerous color variations from the typical golden yellow were noticeable, thus forming a colorful addition to the countryside. Some of these variations included a dark rusty brown banner or keel or flowers of a reddish purple hue. An occasional specimen had a pale, lemon-colored flower, and this variation is termed the forma *sulphurea*. Brian Mulligan selected a specimen of the latter which he recently has named and registered as 'Kirkland'. The Arboretum's collections contain this cultivar as well as several others in a range of colors from brown to red or even white. They grow near Arboretum Drive at the south end of the Leguminosae. The pale yellow 'Moonlight' has never been acquired for the collections, and although it is included in some of the literature on *C. scoparius* f. *sulphurea,* it is probably the Warminster broom, *C.* x *praecox,* one of whose parents, *C. purgens*, is equally as vile smelling as mass plantings of moonlight broom can be along our highways.

Probably the most spectacular of the genus*Cytisus* is *C. battandieri*, a large shrub with leaflets 2 1/2 inches long that are notched at the apex and silky-haired on both sides. Young stems are also gray-pubescent, although they soon become woody with age. This species is known as the Atlas broom since it is native in those mountains of Morocco. Its cylindrical terminal racemes of golden yellow flowers have a delightfully fruity fragrance. The Arboretum grows it as a rather rangy shrub although it can be kept more compact by removal of older canes, a method used in the background of perennial/shrub borders in England. It can also be trained successfully against a wall where it will reach a height of at least twelve feet.

Cytisus purpureus is so different from *C. battandieri* that if it were not for the papilionaceous flowers and the trifoliate leaves, a casual observation would hardly find any

Cytisus scoparius.

relationship. The former plant is a low, rhizomatous shrub, rarely growing more than 1 1/2 feet high, but spreading as a low hedge or informal groundcover to several feet in width. One to three purple flowers are produced in the axils of the previous year's growth. A tidier appearance can be achieved by pruning out the old flowering wood immediately after bloom. A young plant grows in the *Cytisus scoparius* beds near Arboretum Drive.

Cytisus purpureus, it will be remembered from the description of + *Laburnocytisus,* is the scion parent of that graft chimaera, which is of interest not only for the demonstration of the relationship between the two genera but also for the odd effect of witches' brooms where it occurs high in the branches of the tree.

Genista species

The flowers of all genistas are yellow. Their habits are as varied as those of their relative, *Cytisus,* ranging from tall shrubs to procumbent ground covers. Let us describe

Genista aethnensis. *photo: E.F. Marten*

them in that order.

Two closely related species are *Genista cinerea* from southwest Europe, especially Spain, and *G. tenera,* which may be a geographic race of the former. Their simple leaves are very small with silky hairs on the lower surfaces. The soft yellow flowers are produced in clusters of two to four along the branches of *G. cinerea* and in short terminal racemes on the branchlets of the previous year's growth in *G. tenera.* Thus, the general effect is quite different, the branches of *C. cinerea* have a sweeping, uncluttered appearance while those of *G. tenera* are somewhat twiggy. Both of them flower in early summer, thus prolonging the blooming season for

plantings at the south end of the Leguminosae section. They have the added advantage of being able to grow and bloom in light woodland, an unusual characteristic for the brooms. Growing in the same area is *G. aethnensis,* potentially an even taller shrub. It is native of Sardinia and Sicily and appearing up to 6000 feet on Mt. Aetna. Its green stems substitute for a near lack of true foliage. The fragrant flowers are produced in considerable abundance toward the end of the the new shoots.

The following low-growing genistas are suitable for rock garden planting. All of them have small foliage complemented by green stems.

Genista hispanica, the Spanish gorse, occupies a round bed south and west of the larger brooms near Arboretum Drive and another in the Rock Garden. Its interlacing, branched spines only too clearly recall the character of *Ulex europaeus*. However, this species grows only to one foot, making a dense, impenetrable mass planting. In late May it blooms prolifically with heads of two to twelve golden flowers. This would be a useful traffic barrier.

Genista carinalis is a sprawling shrub never more than 12 inches high, but spreading to three or four feet. It tumbles over the rock wall north of the Patricia Calvert greenhouse, growing in semi-shade although it would prefer a sunnier location. Nevertheless it covers itself with spikes of bright yellow flowers in early summer.

Genista pilosa, which is native in most of Europe, grows in the Rock Garden facing Lake Washington Boulevard. This is a spreading, ground-hugging plant to four inches (higher with age) with tiny leaves and intricately branched dark green stems. Even out of bloom, its habit is handsome enough to recommend it to the most fastidious gardener. The University of British Columbia Botanical Garden has introduced an extremely floriferous clone, 'Vancouver Gold', which is now available in the local nursery trade and is worth seeking out for the masses of yellow flowers it produces in the leaf axils in May and June.

These are but a sampling of the shrubby members of the Leguminosae growing in the Arboretum. A visit to the east side of Arboretum Drive from the Mediterranean section south to Rhododendron Glen would reveal numerous others, although this is not the only location where they may be found. However, this area presents certain conditions which are favorable for their success: good drainage, sun in high to moderate amounts, and little or no irrigation which is typical of where most of them are native. As in many members of the family, thorns or spines are not unusual, although certainly they are not the rule; this may be an evolutionary deterrent to herbi–vory. Recurring themes among them are green stems, small leaves and yellow flowers. The exceptions are notable and especially interesting.

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The Proper Names of the Yulan and Xinyi or Mulan Magnolias

BRIAN O. MULLIGAN

It has been more than a decade since the publication of Dr. S.A. Spongeberg's article "Magnoliaceae Hardy in Temperate North America" in the Journal of the Arnold *Arboretum*, (July, 1976). In that publication he upheld the names *Magnolia heptapeta* and *M. quinquepeta* for the two Chinese species that had usually and ordinarily been known to gardeners and nurserymen worldwide as *M. denudata* and *M. liliiflora.*

Dr. Spongberg based his authority on the earlier investigations of Dr. J.E. Dandy (1934), in London, who had accepted as true magnolias two Chinese drawings of plants which had been published by P.J. Buchoz in Paris in 1776. Buchoz had printed these drawings under the names of *Lassonia heptapeta* and *L. quinquepeta.* Dr. Dandy then transferred them to the genus *Magnolia* as *M. heptapeta* and *M. quinquepeta.* However, in later publications (1950 and 1978), he evidently changed his opinion and reverted to the names which had been given by Desrousseaux in 1791 of *M. denudata* and *M. liliiflora.* Unfortunately Dr. Spongberg did not endorse Desrousseaux's names as well in1976, since many botanists and horticulturists have been unwilling to accept Buchoz' names. The great authority Alfred Rehder at the Arnold Arboretum, in his monumental *Bibliography of Cultivated Trees and Shrubs*, (1949), described the Buchoz' names *(heptapeta* and *quinquepeta)* as "innaccurate and false." Nor were they even mentioned by the editors of W.J. Bean's *Trees and Shrubs Hardy in the British Isles*, 8th edn., (1973), or by the late Dr. Gerd Krussmann in his *Manual of Cultivated Broad-Leaved Trees and Shrubs*, English edition, (1985).

The names *Magnolia heptapeta* and *M. quinquepeta* have, however, been accepted by the editor of the American Magnolia Society's Journal, *MAGNOLIA*, and by some nurserymen growing them. Consequently Dr. F.G. Meyer, botanist at the U.S. National Arboretum in Washington, D.C., and Dr. E. McClintock of the Department of Botany, University of California, Berkeley, have collaborated and published an exhaustive article in *Taxon*, the journal of the International Association of Plant Taxonomy, (vol. 36, no. 3, pp. 590-600, Aug. 1986), titled, "Rejection of the Names *Magnolia heptapeta* and *M. quinquepeta* (Magnoliaceae)." In this they discuss the whole problem in full detail, starting with Buchoz' published drawings, which are

Magnolia denudata *in full bloom in Rhodendron Glen.* *photo: author's*

illustrated for readers evaluation, and giving several excellent and valid reasons why they cannot be accepted as true magnolias. To quote from their article, "the resulting pictures show nothing of any diagnostic value in the identification of two species of *Magnolia*. The flower details are totally incorrect and fictitious for *Magnolia*." They then list and describe five separate features in the drawings which are not those of a magnolia.

So all horticulturists should be greatly indebted to these two authors for so carefully and thoroughly clearing up what has been an annoying problem in *Magnolia* nomenclature for more than a decade. Some labels will no doubt have to be changed as a result of this piece of research, but fortunately none in our Arboretum, where there are old specimens of both species, particularly the huge plant of *M. denudata* in Rhododendron Glen. The journal *Taxon* can be consulted in the Science Library at the University of Washington.

right: Magnolia liliiflora. *photo: Joy Spurr*

A Plant Hunting Trek in Nepal
Part III, The Upper-Elevations

TAMARA BUCHANAN & DOUG BENOLIEL

In this, the third and final part, the authors describe the plants they found at the elevations between 13,000 and 18,500 feet. Many of these plants would be attractive additions to the Northwest garden.

In the shadows of the highest mountains on earth, tucked away amongst the rocks, can be found alpine plants growing at the upper reaches of vegetative life. At the high elevation of between 13,000 and 18,500 feet the air is thin and the trekking botanist must walk slowly. The slower one travels, however, the more one can observe the plants and find hidden Himalayan treasures.

Much of the intrigue and excitement of the great Himalayan Mountains lies in the possibility of seeing a diversity of flora within a short geographic distance. In the book, *Flowers of the Himalaya,* the authors, Oleg Polunin and Adam Stainton, indicate that altitude, rainfall, and aspect are the three most important factors, which together create different habitats and climates. The consequence is a richness of flora that thrives throughout these unique mountains.

Altitude is the most influential factor. The temperate zone starts around 4500 feet and extends to the tree line, which is variable, depending upon aspect, rainfall, and man's influence (use of plants for animal forage and need for wood for building and cooking fuel). Above the tree line (about 13,000 feet) upward to permanent snow (about 18,500 feet) is the alpine zone. The lower reaches of this zone are utilized for animal grazing — particularly yaks, dzobyoks and goats. In Pheriche at 14,000 feet we noted approximately two dozen stone huts that our sirdar (head sherpa) told us were occupied each summer by yak herders.

Rainfall is the second most leading factor that influences the distribution of Himalayan flora. In this, the eastern part of Nepal, most precipitation is in the form of the monsoon rain from June through September.

Aspect, the way the land lies, is the third of these important factors. The north, and to a lesser degree the west, facing slopes of these steep and rugged mountains receive much less sunshine than the south and east facing slopes. Consequently, these latter slopes lose their snow more quickly in the spring and remain warmer and drier throughout the growing

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The line illustrations in this article are from the book, Flowers of the Himalaya, *by Oleg Polunin & Adam Stainton, drawings by Ann Farrer. Published by Oxford University Press, 1984.*

season. The northern and western slopes apparently retain more moisture in the soil and thereby support a greater plant diversity.

As we climbed above 13,000 feet we began to leave the clusters of *Betula utilis* var. *utilis* with its beautiful peeling bark and the accompanying *Rhododendron wallichii*. *Juniperus recurva*, the drooping juniper, diminished in size from a five to ten foot tall tree to a knee high shrub. We no longer saw any of the taller rhododendrons like, *R. campylocarpum*, *R. campanulatum*, or *R. arboreum*. At this elevation we were above tree line and there were no more *Abies spectabilis*, the Himalayan silver fir, nor any *Pinus wallichiana*, the Himalayan blue pine (see Winter 1987 *Arboretum Bulletin* Vol.50, No. 4). Even the smaller shrubs became less numerous.

In our closely prescribed acclimatization process we received two days of no trekking. One of the days was at the tiny village of Pheriche (14,000 feet), our sirdar's home. Our "assignment" on that day off was to "walk up some hill." What a great day for belly botanizing ! The skies were clear, as they were during nearly all of our trek, and we had nearly all day to wander and discover.

The hillside we chose to explore was a northeast facing flank of a 21,000 foot peak. We started at 14,000 feet, the foot of this open botanical expanse and wandered to 15,500 feet. Three *Gentiana* that we discovered were *G. carinata*, *G. depressa*, and *G. ornata*. The first was a mat of leaves held closely to the ground with dark blue blossoms. The features observed in the field that helped us to distinguish *G. depressa* from *G. ornata* were that the flowers of the former were a paler blue, less tubular in shape, and they were positioned up, so that the corolla was "looking at the sky." Though we had seen *G. depressa* and *G. ornata* elsewhere, this hillside was the only one where we saw *G. carinata*. During one of our lunch breaks, we noticed our sherpa cook had gathered and was drying the flowers of *G. depressa*. Upon being questioned he revealed that they are used to cure headaches.

Both *Ephedra gerardiana* and *Potentilla fruticosa* var. *rigida (P. arbuscula)* were

Juniperus recurva, *drooping juniper*.

wide-spread. *Ephedra*, a member of the joint-pine family, was most frequently seen as a two to four inch tall cluster of slender, green jointed branches. Although it can grow to knee height, we found it always much shorter, perhaps because of grazing. The yellow flowering *Potentilla* grew in both moist and dry soil, and from valley bottoms up to gravelly terraces. This shrub varied from being a few inches high in an exposed, sandy site at 15,000 feet to growing to a height of two to three feet in the moist soil of protected hillside niches at 12,000 feet. It is possible that the *Potentilla* growing in the higher elevation on dry sites is var. *pumila* rather than var. *rigida*.

Rhododendron lepidotum, *R. anthopogon*, and *R. setosum* were so ubiquitous that in some valleys and hillsides the shrubbery seemed to be comprised mostly of these species. *Rhododendron lepidotum* was first noticed around 10,500 feet with its elevation range extending to approximately 14,500 feet. It was a more variable species, perhaps showing more intraspecific differences than *R. arboreum*. In a five hour walk from

Potentilla fruiticosa *var*. rigida.

Namche Bazaar, a popular meeting town for the Sherpa people, to the Tangboche monastery, the most holy sanctuary in this region of Nepal, we observed thousands of *R. lepidotum*. Some were compact in habit with small leaves, while others had relatively large leaves. The flower color can be pink, dull purple, or even pale yellow. *Rhododendron anthopogon* is the aromatic representative of the high mountain rhododendrons. It flourished in similar open habitats as *R. lepidotum*, although it seemed that *R. anthopogon* tolerated wetter soils. *Rhododendron setosum* was slightly more alpine in its habitat preference than the former two. From our notes its range was 12,500 to 16,500 feet. In a hanging glacier valley floor at 14,000 feet with the picturesque peak of Ama Dablam (22,600 feet) situated near one end, we recognized acre after acre of all three species. For nearly two hours we trudged among, through and over hundreds of thousands of these ericaceous gems. Imagine what a sight this would be in the spring when these plants are at peak bloom. The dozens of seedlings that we have germinated and grown from these three rhododendrons are performing well. We hope to see the first plants flower in 1991.

The most exciting member of the dock family was *Polygonum affine (Bistorta affinis)*. The single population of *P. affine* that we sighted grew in an exposed scree incline just off the trail at 15,000 feet on the way to Everest base camp. This mat-forming alpine perennial had a few remnant, four inch tall flower spikes. *Polygonum affine* "Superbum" is an excellent groundcover. *Polygonum tortuosum, (Aconogonum tortuosum)* was also found at 15,000 feet on an exposed southeast facing hillside in rocky, sandy soil. The expired flower stems were a little more than one foot tall. *Polygonum polystachium (Persicaria polystachia)* was three to four feet tall and occupied a sheltered alcove on an easterly exposure where the soil appeared especially rich. This was undoubtedly the most lush patch of this plant found, although our comparison was limited to only two other sitings.

Arenaria spp. and *Anaphalis cavei* grew at 17,000 feet and slightly above. The *Anaphalis* formed a low mat of leaves and stems with a strikingly ornamental seed pod that was silvery and woolly.

Rhododendron nivale was the most alpine of the genera that we saw on our four week trek. We found it at an elevation of 16,500 feet growing in dry sites in seemingly poor, rocky soil. Some of the prettiest plants we found were in a narrow band of one to two hundred individuals eeking out an existence on a sun-beaten south slope. *Nivale* means "of the snows", referring to the high elevation habitat and is most appropriate for this plant. Only one other member of this genus, *R. setosum*, was found at this lofty height.

We observed the plants of the hill country of eastern Nepal, from the lower temperate foothills of 6000 to 9000 feet, to the upper temperate zone of 9000 to 13,000 feet and finally, into the alpine region of 13,000 to 18,500 feet at the base of the highest peaks on earth. Each zone had its own wonders, each appreciated for its own merit.

Reference Gems, or Beyond Horticultural Encyclopedias

Valerie Easton, Book Review Editor

The reference collection in the Elisabeth C. Miller Library at the Center for Urban Horticulture is an especially valuable resource for the horticultural community. Home gardeners can access excellent and expensive sets, such as *The Royal Horticultural Society Dictionary of Gardening* (4 Vols & Supplement), the *New York Botanical Garden Illustrated Encyclopedia of Horticulture* (in 10 vols.) and *Index Kewensis*, as well as complete sets of Ortho, Sunset and Taylor Guides. The collection includes many useful current directories, such as *Women in Horticulture, Washington State Nurserymen's Association, International Society of Arboriculture*, etc., in addition to current references on plant diseases, pest control, etc. But beyond these expected horticultural reference works are some new and interesting books gardeners should be aware of.

In response to the query common to all horticultural librarians, "Where can I buy _____?", the staff at the Andersen Horticultural Library (Minnesota Landscape Arboretum) began a file of seed and bulb catalogs. Their greatly expanded in-house file has now been published for the first time as the *Andersen Horticultural Library's Source List of Plants and Seeds*, compiled by Richard T. Isaacson, (Andersen Horticultural Library, University of Minnesota Libraries, 1987). It includes over 30,000 entries for trees, shrubs, vines, perennials, herbs, annuals, vegetables and fruits. All plants are listed by scientific name with cross-references to the common name. Complete offerings of over 200 nurseries are listed, with nurseries selected on the basis of geographic distribution, use of scientific names, and if shipping is available. (The stated goal of geographic distribution was not met for Washington state, with only three nurseries listed; however fifteen Oregon nurseries are included.) Information is given on each nursery, such as frequency of catalog issue, form of plant, and if nurseries are retail or wholesale. This is the most thorough national source list available for locating a wide variety of plant material. If you are looking for local sources, try *PlantSource: The Monthly Magazine of Nursery Stock Availability*, which is published in Bellevue and lists costs, availability, and retail and wholesale sources of plants in Western Washington. There is also a seed and bulb catalog file in the Miller Library.

For the most current information on things horticultural, turn to *Gardening by Mail 2; A Sourcebook*, by Barbara J. Barton (Tusker Press, Sebastopol, CA, 1987). A directory of mail-order resources for gardeners in the United States and Canada, it includes where to buy seeds, plants, supplies, and a list of the best horticultural magazines and books. Not as authoritative as *North American Horticulture* for institutions and societies, nor as complete as the aforementioned *Andersen Horticultural Library's Source List of Plants and Seeds* (although it does have more of a West Coast slant), its strength is its currentness (revised yearly), broadness of scope, and chatty, accessible style. This book would be especially useful if, for instance, you suddenly developed an overwhelming interest in Siberian iris. Where to find all the possible information? You could use the "Plant Sources Index" to find over twenty suppliers nationwide, then the "Geographical Index" to see if any suppliers existed in the Northwest. The "Society Index" lists eight iris societies; the "Magazine and Book" section gives titles of noteworthy books on iris. These especially

useful and thorough indexes were created by a reference librarian who became interested in horticulture and was frustrated at being unable to find "all that information that only *old* gardeners knew — and it took them years to find out!"

Native Trees for Urban and Rural America: A Planting Design Manual for Environmental Designers (Iowa State University Research Foundation, 1978) written by an assistant professor of landscape architecture, is an excellent example of an useful and thorough manual. The first section, an "Elimination Key," is an exhaustive list of plant performance criteria arranged to facilitate comparison. The main section of "Master Plates" contains all the design information on each tree, organized into three areas of concern; visual characteristics, ecological relationships, and cultural requirements. This is initially confusing, but so much information is given succinctly that mastering the format is worthwhile. The "Master Plates" section includes clear line drawings showing tree form, climate range map, and a close up of fruit/flower and leaf. Especially useful is the emphasis put on the selection of trees for their performance in urban settings, with data given for each tree about atmospheric pollution, soil compaction, drought and heat tolerance.

Another specialized reference emphasizing native plants that should be of particular interest to Pacific Northwest gardeners in this year of expected drought is *Plants for California Landscapes: A Catalog of Drought Tolerant Plants* (Bulletin #209, Department of Water Resources, State of California, revised edition, 1981). The State of California has been dealing with a drought situation for years, and has prepared this report for home landscapers, nurseries, government agencies and landscape professionals to aid them in designing water conserving, low-maintenance landscapes. It is divided by type of plant and information is given by botanical name with notes as to size, flower, fruit, and special requirements. (The zone information is only applicatable to California so plant hardiness should be checked in Sunset's *New Western Garden Book*.) Straightforward and easy to use, this reference's greatest value is in the wide variety of drought-tolerant plants listed; grasses, turf substitutes, ground covers, hedges, shrubs, flowering plants and shade trees. This variety of plant material emphasizes the many landscapeing options open to us despite the need for water conservation. The color pictures help to convince us that lush, green flowering plants can be drought tolerant and that water-saving landscapes are not just sand, rock, and cacti. Guides like this one will be of major importance in helping us to adjust to climactic changes and still enjoy gardening in the Northwest.

Whatever your horticultural interests or level of expertise, there is a wealth of information available in specialized references. These are just a few examples of the current and varied horticultural reference books that go far beyond the standard texts, encyclopedias, and *Sunset Western Garden Book*, to delight, inform and inspire us.

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Book Reviews

The Plant Book, by D.J. Mabberley. Cambridge University Press, Cambridge. 1987. 706 pages. $32.00

'What's this little tree? The label says 'syzygium'."? That's an interesting plant — I wonder to what family it belongs, how many species it includes, where it is native, and if it is used ornamentally or for food or medicine. There is now one place to look for the answers: D.J. Mabberley's *The Plant Book*, an alphabetical listing (with descriptions) of all plant genera and families that is aptly subtitled *A portable dictionary of the higher plants*. Under *Syzygium* one finds eleven lines telling us it belongs to Myrtaceae, it includes about 500 species, it occurs in the Old World tropics, it consists of evergreen trees, shrubs, and some rheophytes, and several species are cultivated for fruit and ornament.

For years, many of us have referred to Willis's *Dictionary of the Flowering Plants and Ferns*, which has gone through several editions since 1896. This has not been ideal for non-systematists, as this tome is crammed full of synonyms and contains every orthographic error that has appeared in taxonomic literature, while the sort of general information desired by horticulturists and other plantspersons has been spotty. Mabberley has solved all this in his book by eliminating all but the commonly encountered synonyms and greatly beefing up the information in the genus and family entries.

I was impressed particularly with how up-to-date it is. Of course I turned first to my pet genus from graduate school, *Psychotria* (Rubiaceae), to see what ludicrously outdated estimate he listed for the number of species. Imagine my surprise to find my own estimate of 1400, despite the fact I had yet to publish it in a taxomonic journal!

The final factor that makes me recommend this reference book wholeheartedly is that it should endure a fair amount of use. The flexible covers and narrow shape reminds one of the Audubon field guides that hold up so well in the field.

In sum, if you ever expect to run across a genus about which you don't know everything, this book is a must.

New on the Shelf at the Elisabeth C. Library

Barnes, Don. *Daffodils for Home, Garden & Show*. Timber Press, Portland, 1987.

Cutler, D.F., Rudall, P.J., et al. *Root Identification Manaul of Trees and Shrubs*. Chapman & Hall, London, 1987.

Dajun, Wang & Shen Shao-Jin. *Bamboos of China*. Timber Press, Portland, 1987.

Ernst, Ruth Shaw. *The Naturalist's Garden: Bring Your Yard to Life with Plants that Attract Wildlife*. Rodale Press, Emmas, PA, 1987.

Feltwell, John. *The Naturalist Garden*. Salem House, Topsfield, MA, 1987.

The Gardener's Palette; the Ultimate Garden Planner. Doubleday & Co., Inc., New York, 1987.

Llewellyn, Roddy. *Water Gardens; the Connoisseur's Choice*. Ward Lock, Ltd., London, 1987.

Mallary, Peter & Frances. *A Redoute Treasury; 468 Watercolors from Les Liliacees of Pierre-Joseph Redoute*. The Vendome Press in association with Sotheby's, New York, 1986.

Bristow, Alec. *The Practical Guide to Successful Gardening*. Salem House, Salem, NH, 1985.

Rudall, Paula. *Anatomy of Flowering Plants; An Introduction to Structure & Development*. Edward Arnold, London, 1987.

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Uhl, Natalie W. & Dransfield, John. *Genera Palmarum: A Classification of Palms Based on the Works of Harold E. Moore, Jr*. The L.H. Baily Hortarium and the International Palm Societcy, Allen Press, Lawrence, Kansas, 1987.

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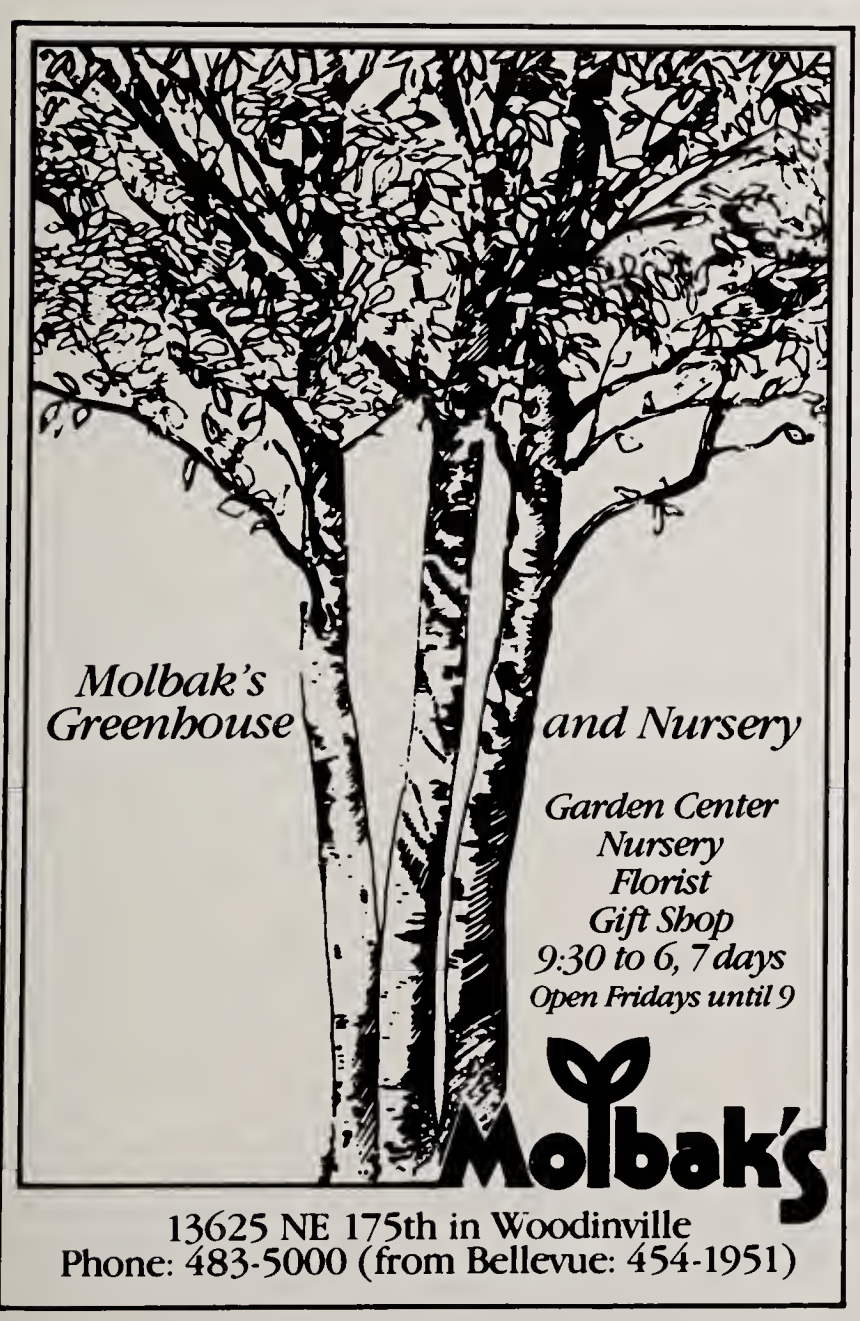

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Salal flowers, see article "Salal: the Cinderella Plant" by Victor B. Scheffer on page 10. photo: author's

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